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ABSTRACT

The first of the three papers in this symposium, "Performance- and Learning Support with On-line Help Systems: An Effectiveness Study" (Theo J. Bastiaens, Jan N. Streumer, Yvette Krul) is a study of a method to cut training expenditures for production, planning, engineering, and inventory employees by implementing an online help system for questions and training needs. After 3 months, the employees still were below needed competence because of lack of training in using the online help system, the unsuitability of such a system to answer all training needs, and the lack of integration of the system with general training. The second study, "Readiness of HRD [Human Resources Development] Instructors to Engage in On-line Instruction" (Chanidprapa Suriya, Tim L. Wentling), which investigated the readiness of two groups of HRD professionals to engage in online instruction and use computer-mediated communication, found that respondents seem to have a positive attitude regarding their use of computers and new technologies, although they are not certain about the effectiveness of computer-based training in comparison to a traditional classroom. In the third paper, "Motivating Community College Instructors to Teach On-line: An Exploration of Selected Motivators" (James J. Kirk, Harold Shoemaker), the investigation explored differences in motivators for teaching courses online as reported by 405 instructors at 38 community colleges. The study concluded that selected motivators (making courses more accessible to students, receiving extrinsic rewards, challenges, and interest in computers) may motivate instructors to teach a course online, but that the motivators vary with the personal characteristics and demographics of the instructors. (KC)

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ED 431 942

10 **Instructional Technology**

Chair: Scott D. Johnson, University of Illinois at Urbana/Champaign

10 - 1 Performance and Learning Support with On-Line Help Systems: An Effectiveness Study

Theo J. Bastiaens, Open University Netherlands

Jan N. Streumer, University of Twente, The Netherlands

Yvette Krul, Origin Human Performance Consulting

10 - 2 Using Participatory Action Research to Investigate the Process of Designing and Developing Web-Based Instruction (WBI)

Margaret L. Bailey, Northern Illinois University

Lorraine M. Hahn, Northern Illinois University

10 - 3 Readiness of HRD Professionals to Engage in Online Instruction

Chanidprapa Suriya, University of Illinois at Urbana/Champaign

Tim L. Wentling, University of Illinois at Urbana/Champaign

10 - 4 Motivating Community College Instructors to Teach On-line: An Exploration of Selected Motivators

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Performance- and Learning Support With On-line Help Systems: An Effectiveness Study

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This study is on employees working in the field of production, planning & engineering and inventory, who depend heavily on a computer for carrying out their tasks. To cut training expenditure the company developed and implemented an on-line help system for all their questions and training needs. The researchers monitored the implementation phase for six months and looked at the usability and effectiveness of the help system in terms of the learning results and the performance improvement of employees.

Keywords: Performance Support, On-Line Help Systems, Effect Evaluation

When equipping the work environment with resources, there is an increasing use of new technologies. A very common way to integrate working and learning with new technology is providing employees on-the-job with programs to process data, for on-line reference, for electronic advice and -training. Some concepts as for example the concept of Electronic Performance Support Systems (EPSS) go further than the provision of stand alone programs and provide a complete integrated electronic environment (Gery, 1989). The goal of all the effort is a better working and learning process. It is based on the assumption that learning this way will create a more active learning process, more concrete forms of learning, an increase in the transfer of what was learned to the job and a reduction in learning time. Another assumption has to do with the expected performance enhancement of individual employees and the organization and refers to higher quality products and processes and productivity growth (Bastiaens, 1997).

Research Questions

In the previous section assumptions on the advantages of working and learning electronically have been mentioned but little has been empirically proven. On the contrary, next to these assumptions also possible disadvantages were found in the literature that could affect the effectiveness. The first disadvantage is related to the learning process. "Just-in time" training at the workplace, providing employees with small task-oriented training granules and employees taking control of their own learning process can create work behavior problems. Clark (1992) argues that employees may fail to build a unified picture of their job when they have to extract information from a help system. Several small information parts will create a fragmented knowledge base. Novices especially need a high level overview of the content to relate details of training. Clark also has her doubts about the learner control and she illustrates this with the research of Milheim and Martin (1991) which indeed proves that learner control is not as effective as instructional control. This means leaving learners to their own devices and let them make their own decisions is not as effective as let the computer environment taking over control and provide a predefined and structured route (for example with CBT).

An other possible disadvantage is related to the performance support and the work that has to be done. Is the support adequate? Will "just-in time" support "de-skill" workers? Will it "demotivate" workers? Or will it automatize the low level tasks and as a result give workers the opportunity to concentrate on high level tasks (Carr, 1992)?

While these issues provide many questions, the study reported here focuses on the following main research question: "What is the effect of on-line help systems on the performance and learning of the employees."

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The Research Setting

The research was done in cooperation with a large Dutch manufacturing firm with 2700 employees. Together with new working procedures and new computer software, they also introduced an on-line help system for the support of 300 employees at the departments Production, Planning & Engineering and Inventory. From this population 4 jobs (planning engineer, planner, coordinator and warehouse employee) were selected to participate in this research project. A planning engineer supports and prepares orders. He determines the sequence of steps and appropriate equipment. A planner coordinates technical activities and takes care of manufacturing orders. A coordinator takes care of the logistics and also supervises the whole project. A warehouse employee is at services of the different departments and projects. After a selection of these 4 jobs, 103 employees participated in this project, 50 planning engineers, 26 planners, 4 coordinators and 23 warehouse employees.

The main purpose of this study is to evaluate the existing computer environment and monitor the implementation of a new help system. The whole study consists of three parts: (1) an effect evaluation of the basic training as well as the on-line help system immediately after implementation, (2) an effect evaluation of a functional refresher training as well as the help system three months later, (3) measuring the reactions and opinions of end and key users concerning the whole training trajectory and on-line help system. This paper will only examine the second part and focus on the effect evaluation of the on-line help system. The competency of employees is evaluated and the following three hypotheses are tested: (A) Employees have a higher score on a case in their own field of expertise than on cases in related fields, (B) Employees with an on-line help system score higher on a case in their own field of expertise than employees without an on-line help system, (C) Employees score higher on the learner test, after three months working with the help system than on a pretest.

Methodology

The second part refers to a summative evaluation three months after implementation of the on-line helpsystem and after a specific refresher training course in the field of their own expertise. Employees (n = 30) from the above mentioned areas in the division Operations are being asked to solve problems in the their own field of expertise (by means of a case study), but also in three other related fields. This is done because the company has the policy to broaden the present tasks of employees. From this group, 11 employees took part in an observation. In Figure 1 the quasi experimental design (a randomized block design) is diagrammed.

O1	X1	O2	O3
O1	X2	O2	O3
O1	X3	O2	O3
O1	X4	O2	O3

O1: Pretest, 8 questions (n = 30)
X1 – X4: Treatment consisting of four cases in every field of profession (n = 30)
O2: Observation (n = 11)
O3: Learning test (n = 30)

Figure 1. Research design of the study.

In the pretest 30 employees are requested to answer 8 open questions (declarative and procedural). They have to respond to the answers without the support of the on-line help system. The pretest is used as a reference measurement for the learning test.

After that, the employees from the earlier mentioned areas in the division Operations have to solve problems in the their own field of expertise (one case), but also in three other related fields (three cases). The cases are developed in collaboration with key-users. These key-users are experts in a specific field. The cases are

exemplary for their daily tasks. The employees have 20 minutes to solve each case. The key-users are reviewers and they will assess all the results on the cases.

It is expected that (1) employees after a specific refresher training course in the field of their own expertise will have the competence to solve a complex case within 20 minutes; (2) employees will score better on a case in the their own field of expertise; and (3) employees using the on-line help system will score higher than employees without a help system. During their work on the cases, 11 employees will be observed by key-users. The key-users analyze in detail how the employees work with the on-line help system and when they need more information.

Finally, the employees have to sit for a learning test. The test exists of exactly the same sort of questions as the pretest (from a database, all the questions were randomly assigned to the pretest or learning test). The results on this learning test are compared with the results on the pretest. It is expected that employees in the learner test with the on-line help, will score higher than before, without the on-line help system.

Results

Before the hypothesis about the competence is tested, the key-users were asked the question "What makes an employee competent?" According to these key-users, it will not be necessary for employees to solve every problem themselves. There is no need to know everything exhaustive. Therefore, the score on the case has a minimum mean score for competence. A coordinator is competent when he has a mean score of 18.6 points on the cases, a planning engineer needs 24 points, a warehouse employee needs a mean of 25.8 points and a planner has to have a mean score of 27 point. The expectation was that employees after a specific refresher training course in the field of their own expertise will have the competence to solve a complex case within 20 minutes. Table 2 shows the results.

Table 2

Mean Score and Standard Deviation on Cases

	n	M1	s.d.	M2	s.d.	M3	s.d.	M4	s.d.
Planning engineer	8	5.4*	6.5	6.1	8.3	1.6	1.6	6.3	5.8
Planner	11	6.5	7.3	4.9*	8.2	2.6	3.6	4.1	5.1
Coordinator	4	7.5	5.3	2.5	5.0	10.3*	1.5	6.4	4.1
Warehouse employee	7	3.0	6.0	7.9	4.5	2.9	3.8	11.0*	7.8

M1 = mean score on case, field planning engineer (maximum point 40)
M2 = mean score on case, field planner (maximum point 45)
M3 = mean score on case, field coordinator (maximum point 31)
M4 = mean score on case, field warehouse employee (maximum point 43)
* = mean score on case in the own field of expertise

The results on the cases are extremely low. Although the employees all had a specific refresher training course, their score three months after implementation of the help-system is far below expectation. No group meets the demands set by the key-users. No group could give a solution to a case within 20 minutes. It is noticeable that a planner and planning engineer has higher results on other fields than their own. This makes the following hypothesis hard to accept.

It was expected that employees have a higher score on their own field of expertise. To test the hypothesis, all scores are standardized first into Z-scores. After a comparison of the Z-score on a case in their own field of expertise (M = .35, s.d. = 1.21) with a Z-score on a different field (M = -.12, s.d. = .66) a significant difference appears (t-test, t = -2.23, n = 30, en p = .02). Contrary to the results of the planners and planning engineers, the hypothesis will not be rejected. Thus, employees score higher on a case in their own field of expertise.

To evaluate the surplus value of the on-line help system, the group of employees was randomly split into two conditions; 15 employees were allowed to use the help system when they were working on the case in their own field of expertise, the other employees were not allowed to use the help system while working on a case in their own field. *The hypothesis was that employees with a help system score significantly higher on a case in their own field of expertise.* The employees with a help system had a mean Z score of .28 (s.d. 1.15), the mean Z score of the group without a help system was .43 (s.d. 1.29). The t-test on these results showed that there is no significant difference between the two groups (t = .33, df = .28, p = .37). The value of the on-line help system was not evident.

To test the learner results, the employees had to answer 8 open questions in a pretest without the on-line help system. The 8 questions were derived at random from a data bank with 16 questions. After the implementation of the on-line help system they had to answer these questions again. Now they had to answer all 16 questions. This time they were allowed to use the help system. The different score between the two test is interpret as learner results. Table 3 shows the data in the pretest and on the learner test.

Table 3

Mean Score and Standard Deviation on the Pretest (M1) and Learner Test (M2)

	n	M1	s.d.	n*	M2	s.d.
Planning engineer	8	4.5	3.1	5	16.6	5.2
Planner	11	6.2	3.5	9	22.3	10.8
Coordinator	4	11.1	7.5	3	22.0	10.7
Warehouse employee	7	10.6	5.3	7	25.5	14.4

M1 = mean score on pretest (maximum point 40)
M2 = mean score on learner test (maximum point 80)
* = the learner test was not completed by 6 employees

To compare the pretest with the learner test first all scores were standardized into Z scores. *The hypothesis was that the employees score higher on the learner test then on the pretest.* The results on T-test ($t = 4.45$, $df = 23$, $p = .001$) are significant. The employees score higher on the learner test after implementation of the help system.

Next to this quantitative measurement 11 employees were observed while using the help system. In spite of a functional refresher training containing a practical component (using the help system) it appears that not all the employees can be qualified as expert. Many of them have problems while working. The learning part comes in the second place. While observing three employees still have problem to start the on-line help system. Although the content is complete some links from the list of reference to a certain topic fail. It appears that the most important and mostly used feature is the "search engine" (44%). "Activity scheme per field" (28%) and "work instructions per job" (25%) are also used often. In general, the employees told us to be content with the on-line help system. They especially like the on-line support. Whenever they have a problem, they can look for information. This is at odds with the sporadic use of the help system. Reasons for the non use vary from "to many mistakes in the help system" to "a preference for books." The information that is looked up, is basically procedural knowledge. Employees do not use the help system to learn more or look for background knowledge. On the question what information is lacking in the help system no univocal answer is given. Most employees do not know what information they really want to see in the help system. They told us that they need up-to-date information in a complete system with different possibilities for search and retrieval.

All employees are in general positive about the impact of the help system. They believe that the on-line help system will stimulate a more effective performance. Although we will not elaborate on the third part of this study (a questionnaire) it is interesting to see the same results in a larger measurement (N=67). Table 4 shows the answers of the employees on the item "Traditional handbooks and materials are more effective then the on-line help system.."

Apparently there is a difference between the perceptual and the measured effects (see results on cases). When the respondents were asked about the critical success factors for the use of on-line help systems it appeared to be the completeness of the information that was seen as most important. Figure 2 shows the frequencies on the seven most important factors.

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Table 4

Results of the Respondents on the Item "Traditional Handbooks and Materials Are More Effective Than the On-Line Help System"

	Traditional handbooks and materials are more effective then the on-line help system	
	N	%
Strongly disagree	16	23.9
Disagree	13	19.4
Neutral	15	22.4
Agree	15	22.4
Strongly agree	8	11.9
Totals	76	100.0

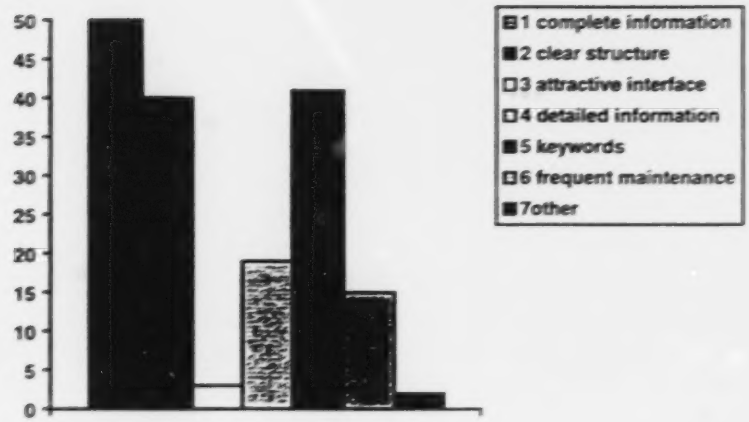

Figure 2. Frequencies in the critical success factors.

The second critical success factor appears to be the possibility to search on key words. Respondents also think that it is important that the on-line help system has to have a clear structure, not to much layers etc. Least important is the graphic design of the interface. They think that a glossy appearance is not critical for the use of the help system.

Regarding a question about a successful implementation and becoming familiar with the on-line help system, Figure 3 shows the results of the respondents. The most important factor for successful implementation is a demonstration of the features of the on-line help system. An information retrieval training making use of the on-line help system makes the help system become more familiar. Another important factor is "the time to practice". Employees need to get familiar with the help system. They want to try and test the help system off the job. Giving them time to learn the help system themselves is also important. The third in row is the integrated use of the help system during functional training. Whenever employees get a functional training, let them use the help system as a tool. The least important is the exhaustive topic list.

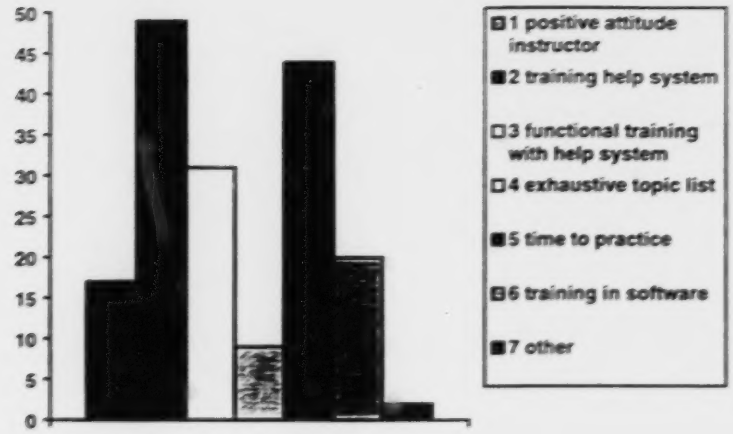

Figure 3. Success factors for the implementation and becoming familiar with the on-line help system.

Conclusions

In general this study shows again the relative impact of electronic sources for the learning process (see also Bastiaens, Nijhof, Streumer & Abma, 1995, 1996, 1997). Main reasons for these results depend often on technical defects as well as on content problems. Often a system is not ready for implementation. Technical problems make the system work with deficiencies, content is often not structured enough (only scanned text) or incomplete. Companies, even nowadays, expect employees to use electronic sources automatically. No attention is paid at the implementation process of electronic sources, at the training of information retrieval skills, or at the human interface. Employees do not use electronic resources inherently. Particularly with help systems it is important to learn more about the features and advantages of help systems. The expectations on electronic sources are often pitched to high. Precisely as in this project the company expected the help system to answer every need for training. The regular training program was cut down and the help system was developed separately from the general training. As the results show three months after implementation the performance of the employees on the cases is still below the required competence level. Even if it is recommendable to develop a on-line help system then a integrated development and use of the help system in the general training is important. Employees need to learn how to use an on-line help system.

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Readiness of HRD Instructors to Engage in On-line Instruction

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Computer-assisted instruction has played an important role in both corporate and academic learning. The purpose of this study was to investigate the readiness of two groups of HRD professionals to engage in online instruction and use computer-mediated communication. Learner readiness focused on the contextual environment (e.g. computer hardware & software, accessibility to the Internet, and supporting environment to study); computer experiences; and attitudes toward Internet-based instruction and distance education. The results of this study are intended to (1) help designers and managers better understand learner environments and characteristics and (2) identify what should be incorporated as orientation in order to facilitate successful learning in Online instruction and computer-mediated communication.

Keywords: Online Instruction, Learner Readiness, Learner Analysis

The computer and the Internet are playing an ever increasingly important role as a delivery method for corporate training and academic instruction. Because of the interactive, multimedia capabilities of the World Wide Web (Web), Internet-based training is gaining popularity. According to the American Society of Training Development Benchmark Forum (1997), the percentage of companies using Internet/network-based electronic distance learning has increased from 12% in 1994, to 33% in 1995, and 53% in 1996. In addition, current popular and professional literature reveals extensive activity on the part of academic institutions to use the Web in the delivery of undergraduate and graduate instruction.

The Department of Human Resource Education at University of Illinois at Urbana-Champaign initiated two distance education programs in 1998. Both programs use computer-mediated communication (e.g. e-mail, synchronous chat, broadcast audio, digital archives) as a medium to facilitate learning. The programs are: (1) a worldwide program on Improving Training Quality through Post Training Coaching and Peer Mentoring (ITQ); and (2) an online master degree in Education with a Specialization in Human Resource Development. These programs are aimed directly at professionals in the HRD field.

This study attempted to assess the HRD professional readiness for both programs. The findings of the study have implications for the Human Resource Education Department regarding recruiting of students, setting of prerequisites for instruction, designing orientation sessions for new students, and designing of Web based instruction. Additionally, other HRD professionals who are planning online instructional activities can learn from the procedures and results of this study.

Problem Statement

The decline in the cost of personal computers, the increase in computer capability, and the simplification of access to the Internet have contributed to the growth of computer-based instruction. Many educators and trainers who use the Web as an educational tool assume that learners have access to e-mail and the Internet. However, there is a need for research in computer-based distance education to discover the computer and communication skills of students (Bizhan, 1996). The question of online learners' capability to effectively participate in this new type of learning remains.

The purpose of this study was to assess the readiness of students to use the computer applications and computer-assisted technologies used in online instruction of two groups: (1) participants in the Workshop on Improving Training Quality through Post Training Coaching and Peer Mentoring (ITQ) and (2) students of the Master of Education in Human Resource Education (HRE) Online degree program at the University of Illinois at Urbana-Champaign.

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Research Questions

This study is guided by three research questions:

1. What is the contextual situation (computer hardware and software, accessibility to a computer and Internet, study facilities, support systems, and learning styles) of learners?
2. How experienced are learners in using computers?
3. What are the learners' attitudes toward Web-based communication and distance education?

Review of Literature

The basic concept of distance education is that instructors and students are separated by distance and that technology is used to deliver the instruction (Moore and Kearsley, 1996; Willis, 1993). Distance education has gained popularity as technology advances, especially in the computer and the Internet. Instruction, whether classroom or web-based, should be planned in a systematic process. Many have argued that Web-based instruction needs to be developed according to instruction design principles. The Internet, particularly the World Wide Web, with its interactive, multimedia capabilities created a new method to disseminate learning , however, teaching and learning through the Internet requires different types of preparation and use by instructors and learners (Porter, 1997).

Distance education can be as effective as the traditional classroom if the background and level of students is considered in selecting the delivery method (Willis, 1993). Students who first start in distance education usually have little or no experience regarding learning from a distance. They have anxiety about taking a distance course. Some might even assume that distance education, when compared to the traditional classroom, is of a lower quality. (Moore & Kearsley, 1996). Learner analysis provides instructors and developers with enough information to design, develop, and implement a distance class. Not only the computer knowledge and skills of students need to be assessed, but also their attitude toward the new type of learning. In a study of factors affecting students' success in distance education by Billing (1989), two of the six factors are attitude toward the distance course (e.g. satisfaction and difficulty with the course) and the students' environment (e.g. employer and family support). Threlkeld and Brzoska (1994) stated that learner characteristics play an important role in the distance student's satisfaction and achievement. Further, they urge that a learner analysis, including learner style, motivation, and background should be conducted before developing a distance course.

From the literature, the three most mentioned attitudes in distance education are (1) students' attitude toward new technology (2) students' perception of their capability to use technology or self-efficacy, and (3) the perceived relative advantages between distance and traditional education. Davis, Bagozzi, and Warshaw (1989) stated that learner attitude toward technology, the perceived usefulness of the technology and distance learning is important in the success of the learner in using computer-mediated communication. In addition, the self-efficacy, the belief that one has the capability to use a technology, plays an important role in users' expectations and satisfaction in using new technology (Webster & Hackley, 1997). The perceived relative advantage between face-to-face instruction and distance education is also important. Even though learners have a positive attitude toward the technology, they may not have the positive attitude toward the distance education. They might also think that the traditional classroom is more effective (Moore & Benbasat, 1991; Webster & Hackley, 1997).

Learner analysis is helpful to decide whether an orientation session should be included. It is desirable for distance students to have an orientation session where they can find out how the delivery system works and what is expected (Moore & Kearsley ,1996; Threlkeld & Brzoska, 1994). Bizhan (1996) also urged that a practical training program based on needs assessment is essential for the success of a computer-based distance education program. Once distant learners are comfortable with the technology, they will engage in learning and communication (Keegan, 1985).

Methodology

In order to reach all of the geographically dispersed subjects, a survey research method was employed.

Subjects

The subjects of this study were: (1) 31 ITQ workshop participants from 18 countries around the world; and, (2) 19 HRE Online students, all are US citizens and live around the Chicago metropolitan area and were enrolled in the HRE OnLine program during the summer of 1998.

Instrumentation

Three different instruments were used to collect readiness information from subjects. An application form and an online questionnaire were used for the international group of ITQ participants. A second online questionnaire was used with the masters students. The instruments are described as follows.

ITQ Application Form. In addition to general information about applicants (e.g. name, address, and experience), this form consisted of (1) 9 dichotomous response (yes/no) questions regarding computer operating system, e-mail and attachment capability, Internet connection, Web browser and software applications, and (2) six Likert scale items related to computer software application competencies.

ITQ questionnaire. This online instrument contained 34 questions as follows:

- 10 dichotomous response (yes/no) questions regarding Internet access, CD-ROM, sound capability, employer support, technical support, and past experience with Web-based communication.
- 1 checklist related to Web browser skill competency
- 20 Likert scale items regarding: computer competency (e.g. general use of computers, use of multimedia, group discussions, and World Wide Web); English skills in typing, speaking, listening, and reading; learner motivation; self-efficacy; and attitude toward Web-based training and distance education.
- 3 open-ended questions regarding e-mail, Internet, and technology problems that learners have faced.

HRE OnLine Masters Student Questionnaire. For the HRE online students, an online questionnaire was employed to address the research questions. The questionnaire consisted of 42 questions. The details of questions are as follows.

- 17 dichotomous response (yes/no) questions regarding the computer hardware qualifications, operating systems, e-mail and attachment capabilities, Internet connections, Web browsers, software applications, accessibility to computer and Internet, employer support, technical support, and past experience of Web-based communication.
- 5 checklist items related to the availability of various computer software programs and computer competency in using Web browsers, word processors, e-mail, and Microsoft PowerPoint.
- 19 Likert scale items regarding computer competency (e.g. general use of computer, use of multimedia, group discussion, World Wide Web, word processors, and Microsoft PowerPoint), learner motivation, self-efficacy, attitude toward Web-based training and distance education.
- 1 Open-ended question regarding technology-related problems that learners have faced.

Data Collection

The questionnaires were posted on the Web sites of both programs (ITQ workshop and HRE OnLine program Web site), and subjects filled out the questionnaires and submitted them electronically. In addition, the e-mail and paper versions of questionnaires also were made available. For the HRE online group, during the first class, which was a face-to-face class, the instructor informed students about the questionnaire and that the questionnaire was part of a voluntary assignment. After one week, the instructor followed up by sending an e-mail to HRE Online students and mentioned it during a synchronized chat hour of the class.

For ITQ subjects, the participants' application form was collected in the spring of 1998. Data were compiled, then the questionnaire was designed to gather the additional information. The ITQ Coordinator informed participants regarding the questionnaire via e-mail with a brief description of the Web site and the purpose of the questionnaire. Two weeks after the first e-mail, a follow-up e-mail was sent by the ITQ Coordinator.

Data Analysis

Collected data were analyzed using both quantitative and qualitative methods. The mean and percentages of the quantitative responses were calculated. A content analysis and categorization was used to analyze the answers from the open-ended questions.

Results

The average response rate was 88% (the response rates of the ITQ and HRD groups were 87% and 89% respectively). The major findings of this study were organized by research questions and are presented as follows.
Research Question 1: What is the contextual environment (computer hardware and software, accessibility, study facilities and support systems) of the learners?

All respondents indicated that they had an IBM compatible computer with a Windows operating system. The majority of respondents' computers are well equipped with sound and CD-ROM. All of them reported having Internet access. In terms of the learners' computer applications, all of them have a Web Browser. Only one respondent reported not having e-mail with attachment capabilities. The majority of respondents have word processor programs and database programs. However, only 48% of the respondents have a presentation program (see Figure 1).

Figure 1: Computer Equipment, software, and Internet

Computer Equipment, Software, and Internet	**% of respondents**
Window Operating software	100%
Sound	84%
CD-ROM	88%
Internet Access	100%
Web Browser	100%
E-mail with attachment	98%
Word Processor	87%
Presentation Program	48%
Database Program	75%

Most of respondents have an environment that supports the use of online programs (see Figure 2). Though 81% of the respondents are primary users of their computers, all reported having convenient access to computers, and 96% have convenient access to the Internet. Both programs reported the same result except the employer support, 96% of ITQ respondents received employer support, where only 65% of the HRE OnLine students had that support. In addition, the majority of the ITQ subjects (85%) had technical assistance available but only 24% of HRD students had that.

Figure 2: Participants' Contextual Elements

Contextual Elements	**% of respondents**
Primary user of computer	81%
Convenient access to computer	100%
Convenient access to Internet	96%
Own place to work for extended period of time	98%
Employer support	96%
Technical assistant available	65%

Regarding the problem of technical problems that participants have faced, ITQ respondents reported problems regarding the Internet such as limited access, limited Web browser skills, and technical problems with network and equipment.

Research Question 2: How experienced are learners in using computers?

On a competency scale of 1 to 4 (1 = poor and 4 = good), the respondents reported that their skills are high in terms of general use of the computer, search for information in World Wide Web, use of e-mail, and use of word processors (see Figure 3). However, their skills are less strong for use of CD-ROM and multimedia. Respondents

stated that they are least familiar with the use of the group discussion application such as electronic bulletin boards and chat rooms.

As for Web browser competency, most respondents are able to view and navigate the World Wide Web, and print web pages (see figure 4). Though the average of respondents who are able to use search tools is 60% , the difference between two group is apparent. About 71% of HRD respondents are able to use search tools versus only 50% of ITQ respondents. Both groups are less familiar with the advanced skill of Web browsers such as bookmarks, downloading programs from the Internet, and using plug-ins such as RealPlayer.

Figure 3: Participants' computer application skills

Computer Application Skills	Average Rating
General use of computer	3.36
Use of CD-ROM	2.86
Use of multimedia	2.57
Use of e-mail	3.25
Search for information (World Wide Web)	2.94
Group Discussion (E-Bulletin Board, Chat)	2.16
Use of Word Processor	3.53

Note: 1 = Poor, 2 = Below average, 3 = Average, and 4 = good

Figure 4: Participants' Web Browser Skills

Web Browser Skills	% of respondents
View and navigate the Internet	87%
Use search tool	60%
Bookmark sites and organize bookmark files	42%
Print Internet page	76%
Download program from Internet	48%
Use Plug-in such as Real Player to listen audio files	35%
Use Plug-in such as Real Player to view video files	29%
Use acrobat reader to open and read document .pdf files	25%

Research Question 3: What are learners' attitudes toward computer-mediated communication and distance education?

Learners seem to have a positive attitude regarding their use of computers and new technologies (see Figure 5). The respondents reported that they enjoy using their computer and the Internet. In terms of their motivation and learning characteristics, the respondents seem to agree that they are motivated to use new technologies and they are self-motivated and independent learners. One source of motivation is that learning about distance learning technology will support their career goal. As for the learners' self-efficacy, respondents reported that they are confident in their ability to do well with network-based communications and they will try new technologies even if they feel a little bit apprehensive.

In term of their attitudes toward computer-mediated communication and distance education, although the respondents appear to agree that it is not necessary to be in a traditional classroom environment to learn, they are not certain about the effectiveness of computer-based training when compare to a traditional classroom.

Basically, the results of this study focus on obtaining learner characteristics which help the design, development , and implementation of an online program. The strengths of responding groups is that they have computer hardware, software, and Internet access that enable the implementation of online programs and they are motivated and confident that they will do well with the technology. The weak point is their computer application skills especially with multimedia and Web Browsers. In addition, They have not been exposed to the use of the Internet as a learning method and they are not certain in the effectiveness and efficiency of web-based training. One implication is that an orientation should be designed to show participants how the new technology works. Also, Web Browser skills training should be provided in the orientation to help participants to be more efficient with the online instruction and reduce the frustration with new technology. The orientation will prepare to participate in the virtual environment and reduce their anxiety in taking online classes, thus, increasing their satisfaction with learning. Another implication for the implementation of online programs is that of technical support. With only 25% of HRD online

students having technical assistance available, the HRD Online program needs to provide sufficient technical support to the students.

Figure 5: Participant's attitude toward computer-mediated communication and distance education

	Rank
I enjoy using computer in general	4.48
Overall,, I enjoy using Internet	4.34
I am motivated to use new technology	4.54
I am confident that I will do well with network-based communication	4.48
When I am asked to use new technology, I will try them even if I feel a little bit apprehensive	4.58
I believe computer-based training via the web is as effective as traditional training	3.90
It is very important that the trainees and trainers are in the same room	3.10
If the class were to use a traditional format, it would be better	2.57
It is not necessary to be in a traditional classroom environment to learn	4.19
I am a self-motivated, independent learner	4.60
Learning about distance learning technology will support my career goals	4.55

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Discussion

Learner analysis is very important to the design, development, and implementation of the online program. The analysis should not only look at the equipment, but also consider the skills and attitude toward the new technology. The more understanding of the learners, the better the online program can respond to the participants or customers needs. Thus, readiness of the learners is the stepping stone to the success of an online program.

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Motivating Community College Instructors to Teach On-line: An Exploration of Selected Motivators

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This investigation explored differences in motivators for teaching courses on-line as reported by 405 instructors at 38 community colleges. Differences in reported motivators were examined with respect to age, gender, subject matter taught, knowledge of computers, knowledge of the web, prior experience with on-line courses, size of employing institution, and geographical location. The findings hold implications for organizations seeking ways to influence instructors to teach their courses over the World-Wide-Web.

Keywords: Web-Board Instruction, Community College, Motivation

The creation and rapid growth of the Internet, especially the graphical portion known as the World-Wide-Web, is changing how people learn (Green, 1996). For example, it is estimated that in the near future 25% of all community college students will acquire part of their education via the Internet and that community colleges will compete nationally/internationally for students via distance learning technologies (Morrison, 1995). Many community colleges already offer a wide array of courses, certificates and degree programs through various on-line delivery modes. Examples include Bellevue Community College, Brevard Community College, Clackamas Community College, Colorado Community College Online, Edmonds Community College, Greenville Technical College, Hawkeye Community College, Laramie County Community College, NorthWest Arkansas Community College, Pikes Peak Community College, and Vance-Granville Community College.

Some educators believe that community colleges of the twenty-first century will need to employ a variety of instructional delivery modes (Weiner, McVeigh, Clever, Brasington, & King, 1997). They hold that many students will be able to continue the traditional pattern which is to meet at regularly designated class times at a particular location. For many others, accessibility to educational offerings will be a major concern. Distance learning over the World-Wide-Web will be one way of addressing the access issue. However, many community college faculty have concerns about distance education and are reluctant to embrace its technologies. They are concerned about the impact of technology on their roles as faculty members (Monaghan, 1995). Resistance centers on several fears expressed by faculty--"fear of change, fear of time commitment, fear of appearing incompetent, fear of techno failure, fear of reprisals (Rutherford, 1997). Expressions of doubts by faculty should be viewed by planners as valuable input for developing successful strategies to motivate faculty to adopt technology in their teaching (Aiken, 1997).

Related Literature

If it is assumed that most community college instructors have a choice to teach or not to teach on-line and that Internet-Based-Instruction is a technological innovation, there are three bodies of literature particularly relevant to the subject of this investigation. They include individual decision-making, innovation diffusion, and motivation theory. With respect to individual decision making, Carney (1991) believes that people exhibit one of four decision making styles (i.e., confusion, dependent, intuitive, planful). According to Carney, persons exhibiting the confusion style make decisions out of "utter confusion." Dependent decision makers simply defer decisions to others. Intuitive decision makers base their decisions on "gut-level" feelings, where as, planful decision makers systematically make decisions based on relevant facts/options.

Decision making can also be viewed in terms of rational decision making, technological determinism, and praxis. The rationalistic view to decision making sees individuals undertaking extensive analysis of problems and

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opportunities prior to making a decision on a specific course of action (Forester, 1989). Technological determinism may be defined as the belief that one's future is being shaped by technology (Forester, 1989). Determinists see the decisions of people being influenced more by technology than individual free choice. The praxis view of decision making emphasizes the role everyday cultural practices play in individual decisions. It holds that individuals are socially emerged in culturally defined patterns of behavior and these patterns of activity shape the way people make decisions (Coyen, (1997).

According to innovation diffusion theory (Burns & Stalker, 1961; Harris, 1994: Marchwick, 1997; Rogers, 1995; and Surry, 1997), there are characteristics of any new technology that affect the likelihood of its adoption. They include relative advantage (e.g., is it better than the technology currently in use?), compatibility (i.e., does it fit into existing practices and beliefs?), complexity (i.e., can people understand it?), trialability (i.e., can people try it out before it is permanently adopted?), observability (i.e., can people see the operations and results?), and re-invention (i.e., can people modify it?). Research results suggest that the first three characteristics (i.e., relative advantage, compatibility, and complexity) have the most significant influence on the adoption and implementation of technological innovations (Klopfenstein, 1997).

One of the best known innovation diffusion theorists, Everett Rogers, (Sapp, 1998) believes the adoption of new innovations is affected by both the nature of the innovation itself as well as those considering its adoption. Rogers holds that adopters of innovation can be grouped into five groups; innovators, early adopters, early majority, late majority, and laggards. Innovators adopt new innovations right away, are risk takers, and make up 2.5% of the population. Laggards make up 16% of the population and are the last to adopt an innovation. They adopt new innovations only under duress. Approximately 13.5% of the population are early adopters. Once its usefulness has been shown, they quickly adopt the new innovation. Around 34% of the population are early majority adopters and another 34% are late majority adopters.

In addition to individual decision making and innovation diffusion theories, motivation theorists also provide insights into individual decision making. The classical "scientific" management theory viewed employees as rational economic decision makers driven by a desire to earn the most money possible (Taylor, 1947). This view suggests that extrinsic rewards might cause an employee to adopt a new technology. Maslow and Herzberg offer additional factors which might influence individuals to adopt new technologies and/or to take on extra work. In 1954 Maslow offered his human "needs hierarchy." He held that human beings have universal needs (i.e., physical, security, social, self-esteem, and self-actualization) arranged in a hierarchy. Herzberg (1959) theorized that human beings needed their "hygiene" needs (i.e., company policy and administration, interpersonal relations, supervision, salary, and working conditions) adequately met before they would work at all. He argued that employees were only motivated to work productively by "motivator factors" (i.e., achievement, recognition, work itself, responsibility, advancement).

McGregor and McClelland also emphasized the part need satisfaction plays in worker behavior. In 1960 McGregor offered Theory Y which stressed people's need for achievement and satisfaction from a job done well. McClelland (1967, 1975) accentuated the importance of achievement, power and affiliation needs as motivators. Other authors have emphasized how felt needs vary with respect to career stage and the availability of need satisfiers. For example, White (1973) found the managers most likely to be motivated by security and social needs to be those who had reached a peak in their careers, and for whom some of the other motivators were no longer available. Job interest was a motivator for people who had interesting jobs, variety and challenge were motivators for those with challenging jobs. In 1986, Thorpe looked at 63 organizations in depth and found support for the "Reactance Theory." Reactance Theory holds that people need to feel they have some control and freedom in their work. They are not passive receivers of motivational stimuli, but act in ways to secure control, freedom, and improved chances of obtaining rewards (Bowey, 1997).

In 1964, Vroom offered his Expectancy Theory. He stressed the importance of employees believing that they can improve their effort, that this increased effort will lead to improved performance, and that improved performance will be recognized and lead to a desired reward. However, Wannus, Keon and Latack (1983) showed that workers do not usually go through an elaborate process of information processing and rational decision-making. Rather they base their actions on habit, on expectations derived from previous experience and on advice from respected co-workers.

Research Questions

For the purpose of this study, three research questions were posed. They included:

1. To what degree do selected motivator variables influence instructors to teach courses on-line?
2. Is there a significant difference in the degree to which selected motivator variables motivate instructors to teach courses on-line?
3. Is there a significant difference in selected motivator variables with respect to age, gender, subject matter taught, knowledge of computers, knowledge of the World-Wide-Web, prior experience with on-line courses, size of organization, and geographical location?

Methodology:

A web search was undertaken to locate the universal resource locators of on-line faculty and staff e-mail directories for colleges listed in Peterson's 1997 Guide to Two Year Colleges. Thirty-eight colleges were randomly selected to serve as the sample group. A combined cover letter and 31-item questionnaire was electronically mailed to faculty in the selected colleges. Respondents were also given instructions on how to return the questionnaire. Options included e-mail, fax, or the U.S. postal service. Fax and U.S. mail return options were offered to respondents desiring complete anonymity. Items on the questionnaire related to personal/occupational information, perceived knowledge of computers and the Internet, past experience with on-line courses, and motivators for teaching courses on-line.

Data from the questionnaires was entered into a statistical database from which descriptive and comparative statistics were generated. Descriptive statistics included frequency counts, percentages, and means scores for the various variables. Comparative statistics included the results of Chi square, Anova, and follow-up t. tests A series of Chi square tests were performed to test for significant differences in motivators with respect to gender, subject matter taught, geographical location, and prior experience with on-line courses. Anova tests were used to test for significant differences in motivators with respect to age, knowledge of computers, knowledge of the Internet/World-Wide-Web, and size of employing organization. The probability level for determining statistical significance was $p = .05$.

Results

Of the 609 surveys electronically delivered to instructors at 38 community colleges, 405 were returned (66.67% return rate). Three hundred fifty-nine surveys (88.64%) were returned by e-mail, 33 (8.15%) by U.S. postal service, and 13 (3.20%) by fax. Respondents had a mean age of 45.53 years. One hundred ninety-seven (48.76%) were female and 207 (51.24%) were male. Thirty-one (7.65%) of the respondents had taken a course on-line and 14 (3.55%) had prior experience teaching courses over the Internet.

With respect to question one (i.e., To what degree do selected motivator variables influence instructors to teach courses on-line?), several factors were found to have a motivating influence on instructors. The strongest motivators were make courses more accessible to students, being extrinsically rewarded with more money, equipment, released time etc., and challenge (see Table 1). The variable with the least motivating influence was ordered to teach a course on-line.

As to question two (i.e., Is there a significant difference in the degree to which selected motivator variables motivate instructors to teach courses on-line?), a one factor anova test revealed significant differences among the variables in terms of their motivating influence (DF = 405, Sum Squares = 1517.796, F Score = 1.794, P = .0001). Follow-up t tests showed that making courses more accessible to students, receiving extrinsic rewards such as more money, equipment, released time etc., the challenge of teaching a course on-line, interest in computers, and being ordered to teach a course on-line significantly differed from one another as well as the other five motivators (See Table 2).

Regarding question three (i.e., Is there a significant difference in selected motivator variables with respect to age, gender, subject matter taught, knowledge of computers, knowledge of the World-Wide-Web, prior experience with on-line courses, size of organization, and geographical location?), a series of One factor Chi square tests revealed significant differences in the selected motivators with respect to computer knowledge and knowledge of the Internet/World-Wide-Web (see Table 3 and Table 4). Follow-up t test revealed differences with respect to making courses more accessible to students, the challenge of teaching a course on line, interest in computers, chance of being promoted, chance of being recognized, in order to keep job, to go along with the crowd, and if ordered (see Table 5 and Table 6).

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Table 1. Mean Rating For Motivators For Teaching A Course On-line N=405

Variables	Mean	SD
Make courses more accessible to students	3.978	1.133
Extrinsic rewarded with more money, equipment, released time etc.	3.681	1.361
Challenge	3.36	1.367
Personal interest in computers and technology	3.188	1.386
Increase chances of being promoted/tenured	2.365	1.411
Public recognition from superiors	2.272	1.233
Necessary to keep job	2.156	1.457
Expanded formal job responsibilities	2.084	1.208
If everyone else was doing it	2.042	1.221
Ordered to teach a course on line	1.884	1.336

Table 2. Significance Differences Between Selected Motivators N=405

Variables	Accessible	Rewarded	Challenge	Interest computers	Promoted	Recognition	Keep job	Expand job	Go along everyone	Ordered
Accessible		*	*	*	*	*	*	*	*	*
Rewarded	*		*	*	*	*	*	*	*	*
Challenge	*	*		*	*	*	*	*	*	*
Interest computers	*	*	*		*	*	*	*	*	*
Promoted	*	*	*	*			*	*	*	*
Recognition	*	*	*	*				*	*	*
Keep job	*	*	*	*	*					*
Expand job	*	*	*	*	*	*				*
Go along everyone	*	*	*	*	*	*				*
Ordered	*	*	*	*	*	*	*	*	*	

*Significant difference at .95%

Table 3. One Factor Anova Test For Knowledge of Computers and Selected Motivators N=405

Variables	DF	Sum Squares	F Score	P
*Accessible	4	14.058	2.739	.0285
Rewarded	4	16.587	2.256	.0626
*Challenge	4	36.199	4.994	.0006
*Interest computers	4	125.259	19.27	.0001
*Promoted	4	21.727	2.756	.0277
*Recognition	4	21.275	3.584	.0069
*Keep job	4	22.98	2.762	.0275
Expand job	4	6.948	1.177	.3206
*Go along everyone	4	23.268	3.961	.0037
*Ordered	4	40.243	5.793	.0002

*Significant difference at .95%

Differences among the motivators were also found with respect to age (DF = 4, Sum Squares = 19.497 F = 2.677, P = .0316). Instructors under 30 years of age rated extrinsic rewards a significantly greater motivator than did instructors in their 40s', 50's, and 60's. The same was true for instructors in their 30's compared to individuals in their 60's. Chi square tests showed significant differences in the motivators challenge, interest in computers, making courses more accessible to students and having taken a course on-line (DF = 4, Total Chi Square = 10.252, P = .0364; DF = 4, Total Chi Square = 13.054 P = .011; DF = 4, Total Chi Square = 11.794, P = .0189 respectively). Chi square tests also showed significant differences in the influencing power of selected motivators with respect to having previously taught courses on-line and challenge, interest in computers, and making courses more accessible to students (DF = 4, Total Chi Square = 20.211, P = .0005: DF = 4, Total Chi Square = 20.78, P = .0004: DF = 4, Total Chi Square = 12.341, P = .015 respectively). Instructors with prior experience with taking and teaching courses on-line tended to be more highly motivated by the challenge of teaching courses on-line, their interest in computers, and making courses more accessible to students than instructors with no prior experience with on-line courses.

Table 4 One Factor Anova Test For Knowledge of The Internet/World-Wide-Web and Selected Motivators N=405

Variables	DF	Sum Squares	F Score	P
*Accessible	4	25.425	5.077	.0005
Rewarded	4	15.218	2.061	.0853
*Challenge	4	66.311	9.625	.0001
*Interest computers	4	104.903	15.766	.0001
Promoted	4	13.436	1.686	.1524
Recognition	4	10.732	1.763	.1356
*Keep job	4	27.421	3.297	.0113
Expand job	4	3.818	.639	.6349
Go along everyone	4	9.178	1.54	.1899
*Ordered	4	34.344	4.91	.0007

*Significant difference at .95%

Table 5. Follow-up T Tests For Knowledge Of Computers and Selected Motivators N=405

Knowledge of Computers	Accessible	Rewarded	Challenge	Interest computers	Promoted	Recognition	Keep job	Expand job	Go along everyone	Ordered
Much Less-Less										*
Much Less-Same			*						*	
Much Less-Greater			*							
Much Less-Much Greater			*	*	*					
Less-Same	*		*	*	*	*				*
Less-Greater	*		*	*	*	*				*
Less-Much Greater	*		*	*	*	*	*			*
Same-Greater				*			*		*	
Same-Much Greater				*		*			*	
Greater-Much Greater				*						

*Significant difference at .95%

Table 6. Follow-up T Tests For Knowledge Of Internet/World-Wide-Web and Selected Motivators N=405

Variables	Accessible	Rewarded	Challenge	Interest computers	Promoted	Recognition	Keep job	Expand job	Go along everyone	Ordered
Much Less-Less										
Much Less-Same										
Much Less-Greater				*						
Much Less-Much Greater	*			*						
Less-Same							*			*
Less-Greater	*		*	*			*			*
Less-Much Greater	*		*	*			*			*
Same-Greater			*	*						*
Same-Much Greater	*		*	*						
Greater-Much Greater	*			*						

*Significant difference at .95%

Conclusions

Several conclusions may be drawn from the results of the study. It appears that some of the selected motivators (i.e., making courses more accessible to students, receiving extrinsic rewards, the challenge of teaching a course on-line, and personal interest in computers) may have potential to influence some instructors to teach courses over the Internet. On a 5-point scale each of the motivators had a mean score of 3.188 or above. One might also conclude that ordering an instructor to teach a course on-line would have limited motivating value. On a 5-point scale being ordered to teach a course on-line had a mean motivating rating of 1.884.

Another conclusion derived from the study is that particular motivators (i.e., making courses more accessible to students, receiving extrinsic rewards, the challenge of teaching a course on-line, interest in computers, and being ordered to teach a course on-line) differ significantly from one another and other motivators in their ability to influence instructors to teach courses over the Web. Conversely, certain motivators were very similar in their ability to motivate instructors. Such was the case with improve chance for being promoted and public recognition from supervisor; expanding job and going along with the crowd; and keeping job and public recognition, expanding job, and joining the crowd.

Finally, it can be concluded that the influencing strength of selected motivators varied with respect to particular personal/occupational circumstances. For example, the strength of selected motivators varied with respect to the age of the instructor, their knowledge of computers and the World-Wide-Web, and their prior experience with on-line courses. The motivating strength of challenge of teaching a course on-line, chances of being promoted, public recognition by supervisor, interest in computers, and making courses more accessible to students, tended to increase with instructors' knowledge of computers. Likewise, the challenge of teaching a course on-line, increased chances for promotion, public recognition by supervisor, interest in computers, making courses more accessible to students tended to be stronger for instructors with more Internet knowledge than their colleagues. The motivating value of join the crowd was the greatest for instructors perceiving their computer knowledge to be similar to their colleagues. Ordered to teach a course on-line and to keep job had the greatest motivating value for instructors with computer and Internet knowledge "less" than their colleagues. Extrinsic rewards tended to be a greater motivator for younger versus older instructors. The challenge of teaching a course on-line, interest in computers, and making courses more accessible to students tended be stronger motivators for instructors who had taken or taught courses on-line.

Discussion

The findings of this investigation hold implications for community college administrators attempting to influence their instructors to offer courses on-line. Demonstrating to some instructors how offering their course(s) on-line will make the course(s) more accessible to learners, or telling how it will result in tangible rewards for themselves (e.g., extra money, equipment, or released time), or showing them how it will mentally stimulate them may help to persuade them to offer courses on-line. Such efforts are likely to be most effective with individuals who already have an interest in computers, are knowledge about the Internet/World-Wide-Web, are 30 years of age or younger, and have some prior experience with on-line courses.

It is possible that many instructors see increasing the accessibility of community college courses as a legitimate use of the World-Wide-Web. Some instructors may recognize the extra time and work involved in teaching a course on-line (Kirk and Shoemaker, 1997) and thus expect to be either extrinsically (e.g., pay, equipment, released time) and intrinsically rewarded (e.g.,, mentally challenged). It is suspected that the mix and nature of the expected benefits may differ with respect of an instructor's age and work situation.

Because many of the motivators had significantly greater motivating value for instructors who were interested in technology and saw themselves as being more knowledgeable about technology than their colleagues, community colleges may wish to consider a number of actions. They may first want to identify and get instructors with the greatest interest and knowledge of web-based-instruction to offer their initial on-line courses. They may also want to consider providing instructors more technology training. Part of such training could include having instructors themselves take a course on-line.

This research generally supports other research findings showing motivation varies between individuals and groups (Legge & Millward (1968); White (1973); and Blackburn and Mann (1979). Individuals significantly differed in the degree to which they claimed to be influenced by selected motivators with respect to age and other personal/occupational differences. The results are also consistent with Reactance Theory (i.e., the belief that people need to feel they have some control and freedom in their work situation). Of the 10 motivators studied, being ordered to teach a course on-line had the smallest motivating value.

Additional research studies seeking to determine the degree various motivators actually influence instructors to offer their courses on-line are needed. While instructors in the study indicated the extent to which selected motivators would influence them to teach a course on-line, it did not measure the actual degree instructors were influenced by the selected variables. Future studies might also look at the influencing strength of potential motivator variables not examined in this investigation. Other potential motivators mentioned by respondents included being able to work at home, more flexible hours, reduction in work load, being able to team teach, assistance in learning technology, technical support, and improved audio/video capabilities.

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